Shriners Hospitals for Children®
Love to the rescue.™

2015 SHC Community Health Needs Assessment Report

Shriners Hospitals for Children® — Chicago

Prepared by: SHC — Chicago Assessment Advisory Committee

Mission and Vision

Mission

- Provide the highest quality care to children with neuromusculoskeletal conditions, burn injuries and other special healthcare needs within a compassionate, family-centered and collaborative care environment.
- Provide for the education of physicians and other healthcare professionals.
- Conduct research to discover new knowledge that improves the quality of care and quality of life of children and families.

***This mission is carried out without regard to race, color, creed, sex or sect, disability, national origin or ability of a patient or family to pay.

Vision

- Become the best at transforming children's lives by providing exceptional healthcare through innovative research, in a patient and family centered environment.

Table of Contents

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Statement of Approval

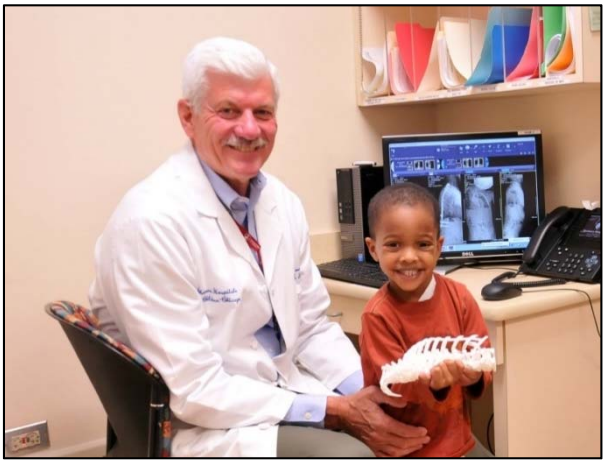
This 2015 Community Health Needs Assessment was reviewed and approved by the SHC — Chicago Board of Governors during their May 24, 2016 meeting and SHC — Chicago Quality and Safety Council during the June 8, 2016 meeting.

Our Commitment to the Community

Shriners Hospitals for Children — Chicago (SHC — Chicago) is honored to submit our 2015 Community Health Needs Assessment (CHNA). Our 2015 CHNA is intended to aid SHC — Chicago in better understanding the health needs affecting members of our community with the goal of fulfilling their immediate and future health needs.

Introduction: Overview of Shriners Hospitals for Children

Shriners Hospitals for Children is a healthcare system of 22 facilities located across North America, dedicated to improving the lives of children by providing pediatric specialty care, innovative research, and outstanding teaching programs for medical professionals. Children up to age 18 with orthopedic conditions, burns, spinal cord injuries, and cleft lip and palate are eligible for care and receive all services in a family-centered environment, regardless of the patient or family's ability to pay. The Shriners fraternal organization was founded in 1870 by an actor and an orthopedic surgeon. In 1919 the mayor of Philadelphia, who was himself a Shriner, led the fraternity to deem their sole purpose as a charity would be to serve the needs of children with disabilities. The first hospital was built in Shreveport, LA, in 1922. In 1926, Shriners Hospitals for Children — Chicago began serving the medical needs of children in the community, especially those with orthopedic conditions associated with polio and no means to receive treatment.



Since its inception, Shriners Hospitals for Children — Chicago (SHC — C) has been committed to improving community health through focused and collaborative efforts designed to address the unmet pediatric orthopedic health needs of those within the communities we serve. In order to have the most meaningful impact on our community's health, we need to have a thorough understanding of its current necessities. This assessment provides information on our community's health outcomes and factors. From these findings, we were able to identify health-related needs and establish an action plan to better serve our community.

About Shriners Hospitals for Children — Chicago

Shriners Hospitals for Children — Chicago, a pediatric hospital located on Chicago's far west side, treats children from across the United States and from countries around the world. It is part of a larger system of Shriners Hospitals for Children, with its home office located in Tampa, Florida. Several of the major conditions treated by SHC-Chicago include:

- Arthrogryposis
- Brachial Plexus Injuries
- Cerebral Palsy
- Clubfoot
- Craniofacial Anomalies
- Hand Deformities
- Hip Dysplasia
- Limb Deficiencies
- Osteogenesis Imperfecta
- Plastic Surgery
- Scoliosis
- Spina Bifida
- Spinal Cord Injury
- Stable Fractures

A number of sub-specialty services are also offered that come together to comprehensively treat and support our patients and families.

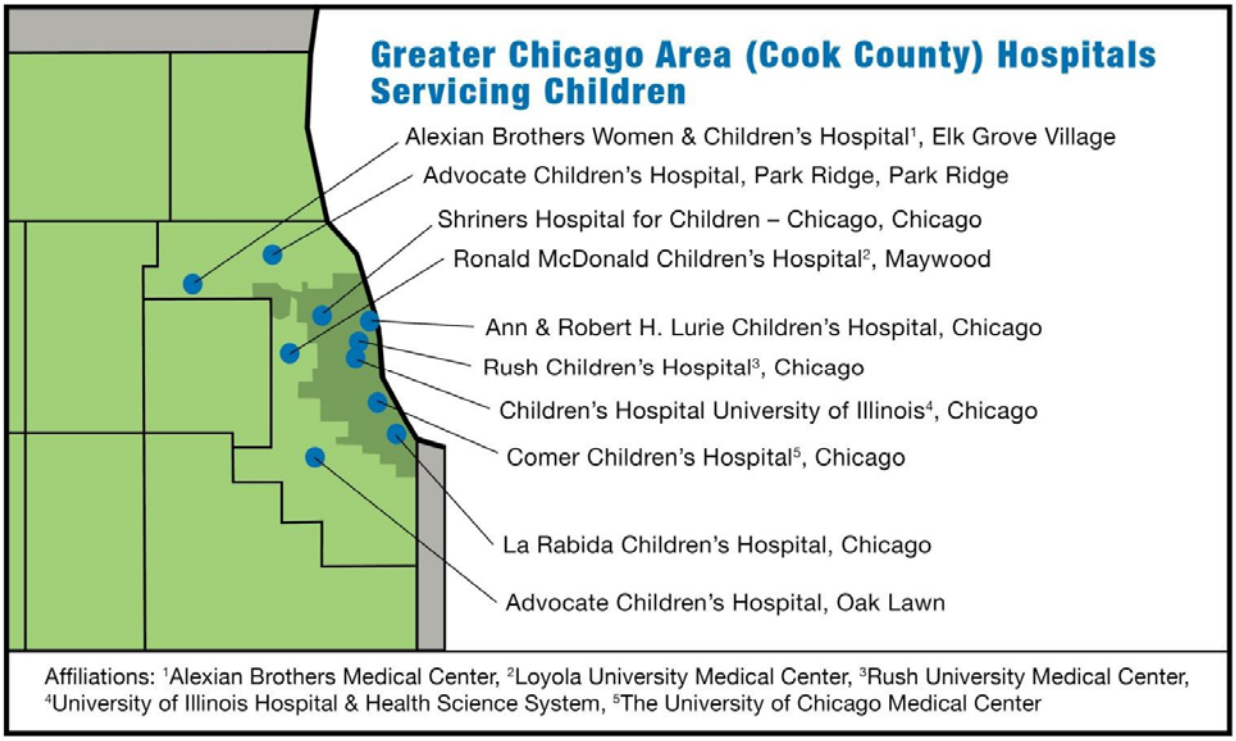
SHC — Chicago is a teaching hospital supporting the educational needs of medical; nursing; physical, occupational, and speech therapies; and radiology residents/students. Research is one of the cornerstones of SHC — Chicago's mission. Our in-house research teams include internationally renowned experts whose discoveries have changed treatment methodologies and improved the lives of countless children. Whether in the laboratory or in clinical environments, we are committed to the continual pursuit of knowledge that improves the delivery of clinical care.

For its CHNA, SHC — Chicago has defined its community as the four counties in Illinois that are within closest geographic proximity to the hospital: Cook, Lake, Dupage, and Will counties. SHC — Chicago is located in the City of Chicago and nearly 40% of the total patients served by the hospital come from within these four counties surrounding the hospital.

We know that much of what influences our health happens outside of the healthcare community - in our schools, workplaces and neighborhoods. Recently, the Robert Wood Johnson Foundation and University of Wisconsin Population Health Institute presented the *2015 County Health Rankings.* The rankings are based on a collection of 50 reports that reflect the overall health of counties in every state across the United States. The ranking comparison of one county to another is outlined in terms of overall health and factors that influence health. The indicators included health outcomes (mortality and morbidity) and health factors (health behavior, clinical care, social, economic factors, and physical environment). The purpose of the project was to get a standard way to measure how healthy a county is and see where it can improve.

While Dupage, Lake, and Will Counties are all ranked in the top 25% healthiest among the state, Cook County is not ranked highly. There are 102 counties in Illinois and in comparison to other counties Cook County Ranks 64th in health outcomes (see Table 1, pages 19-20). The lower rankings suggest that Cook County needs to improve health outcomes by addressing all health factors with evidence-based practices and approaches. This is the reason SHC — Chicago chose to focus our 2016 Community Health Needs Assessment on Cook County and three border counties around it. Cook County makes up the largest demographic area where SHC — Chicago patients come from, and continues to bring the highest number of new patients into the hospital (see Figure 1, page 10).

While there is a vast array of patients requiring pediatric orthopedic intervention throughout the Chicago community and specifically Shriners Hospitals for Children — Chicago**,** the focus of this community health needs assessment is on scoliosis incidence and the value of screening for early detection and treatment of this condition.



Process and Methods

Secondary — Population Data

A Community Health Needs Assessment Team, consisting of professionals representing administration, business development, and performance improvement was convened and met monthly at first and then bimonthly from October 2015 through May 2016. This workgroup was responsible for establishing the health indicators that would be collected for the four county areas. Another task was to determine what type of service Shriners Hospitals for Children — Chicago could provide for the community, being a specialty hospital well known for caring for pediatric patients with orthopedic conditions. For the purposes of this assessment, the decision was made to continue to focus our efforts on scoliosis incidence and screening in the pediatric population. This was based on the success of the efforts made to educate clinicians and the general public on screening and early detection and treatment of scoliosis. The results of this assessment were shared and discussed with the medical staff, quality and safety council, and the local Board of Governors of SHC-Chicago to assure that the action plan was realistic and feasible.

Existing Data

Existing data sources included data from publicly available resources, as well as data from Truven Informatics. The publicly available resources contain data related to health outcomes, health behaviors, and social and economic factors. The data provided by Truven includes information on pediatric demographics in the four county areas.

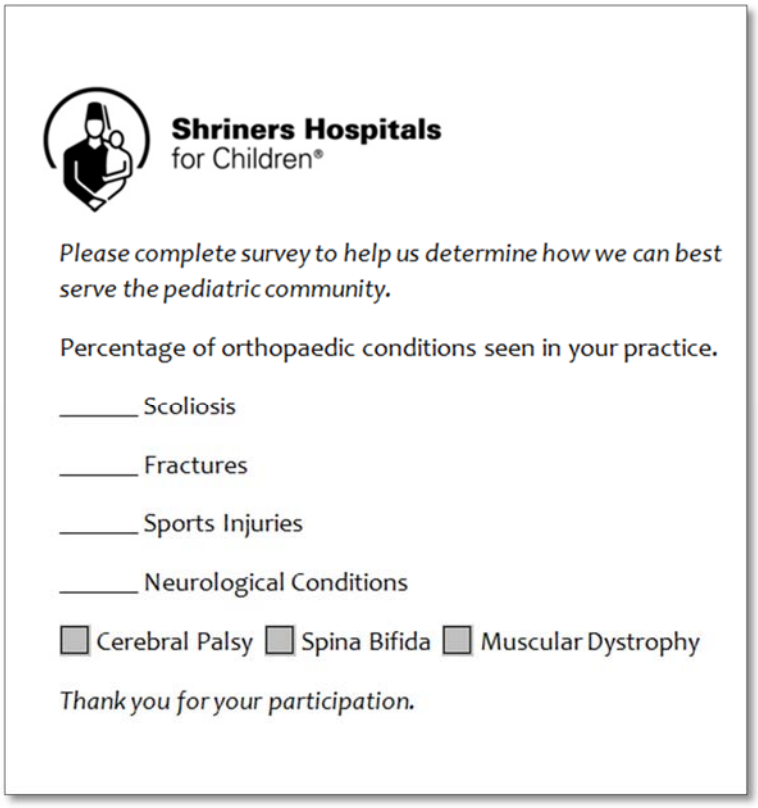
Primary Community Survey of Practitioners

A brief written survey of the participants in the annual pediatric orthopaedic conference was conducted to determine how we as a specialty hospital could assist the pediatric community. There were a total of 71 participants at the conference and 51 or 72% responded to this survey. Results are displayed below.

Average percentage of patients with pediatric orthopaedic conditions presented in a practice

Scoliosis	Fractures	Sports Injuries	Neurological Conditions
10%	20%	26%	13%

Overall evaluations of the program were very positive and there were several comments noting the strengths of the program being the information on orthopaedic conditions to assist general pediatricians to make more thorough evaluations and the expertise of the speakers. More importantly, several of the participants noted that they would change their practice by performing more vigilant scoliosis screening and at an earlier age.



Shriners Hospitals
for Children®

Please complete survey to help us determine how we can best serve the pediatric community.

Percentage of orthopaedic conditions seen in your practice.

_____ Scoliosis

_____ Fractures

_____ Sports Injuries

_____ Neurological Conditions

☐ Cerebral Palsy ☐ Spina Bifida ☐ Muscular Dystrophy

Thank you for your participation.

Internal Data

Information on the number of patients treated as inpatients at Shriners Hospitals for Children — Chicago was obtained from the data repository in our electronic health record. This was used to compare our numbers to the state reporting database, Truven Analytics.

Literature Review

A literature review was conducted using the key words scoliosis, pediatric, and scoliosis screening. The resources obtained that focused on scoliosis screening were used. Studies both support and discourage routine screening for various reasons; one of these being over-referral, which is sometimes due to competency of the screeners. In the state of Illinois, an

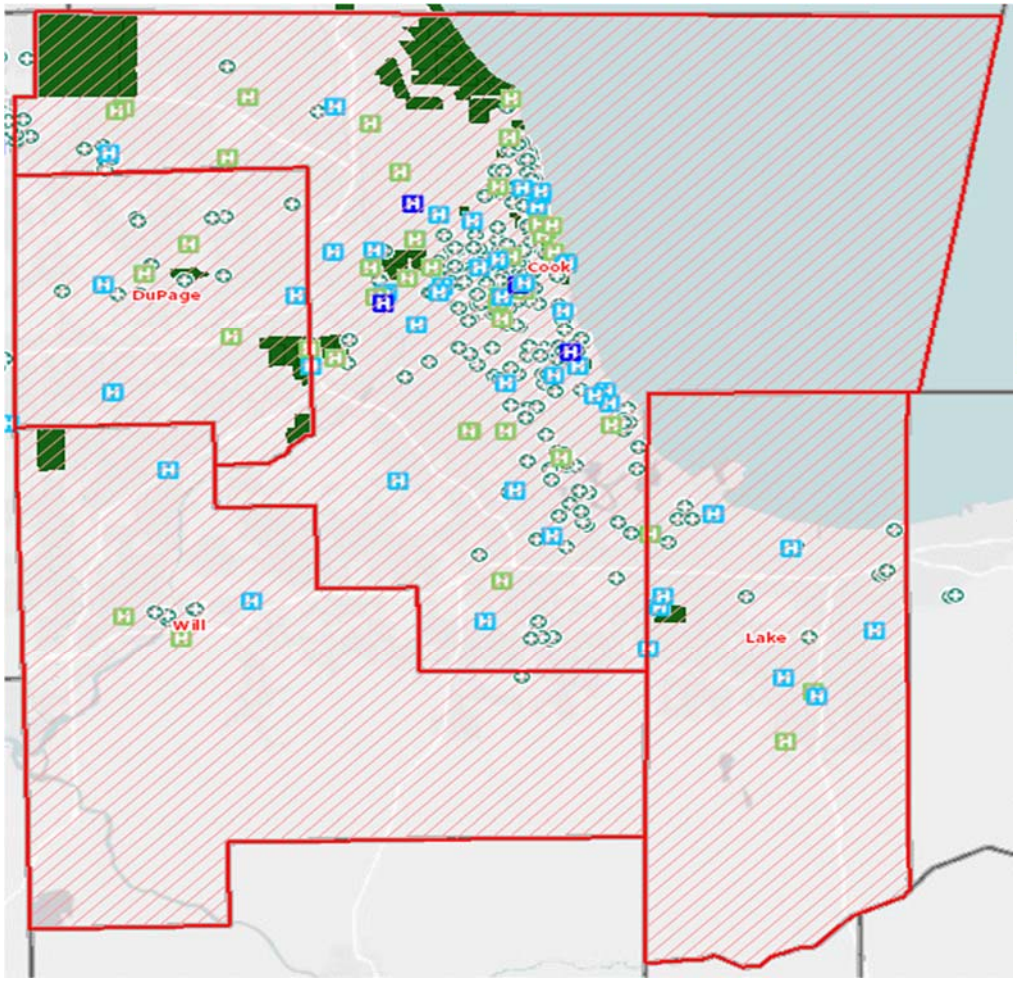
amendment to the school code was passed in 2009, declaring scoliosis screening not mandatory in Illinois schools. Currently 26 states in the country mandate continued screening in schools. School screening programs for scoliosis remains the subject of considerable controversy. If early detection can save one child from continued spine deformity to the point that he/she would need surgery than it is well worth the time and effort.

A position statement on Screening for Idiopathic Scoliosis in Adolescents was published in 2008 by the American Academy of Orthopaedic Surgeons (AAOS), the Scoliosis Research Society (SRS), the Pediatric Orthopaedic Society of North America (POSNA), and the American Academy of Pediatrics (AAP) to provide an educational tool, recognizing the benefits of screening in early detection and treatment of the condition. Based on this information the team decided that we would focus our community efforts on education of health care professionals regarding scoliosis screening. The target age group of the screening would be school-aged children since this is the age group that would be most impacted by screening and early intervention. Although we are focusing on school-aged children, this will eventually have an impact for adults potentially affected by scoliosis since it is a progressive condition and will affect their overall health and well-being. Approximately one in 40, or seven million people, have scoliosis in the U.S. Another resource that was used was Healthy People 2020 to determine if any of the goals addressing child/adolescent health related to scoliosis screening as part of a prevention strategy. Promotion of health and access to health care resources for middle school/adolescent children are goals of Healthy People 2020.

Figure 1


ILLINOIS
Number of new cases in 2015 (YTD) 1555
change from 2014 +206
Jo Daviess 1 -3
Stephenson 4 0
Winnebago 53 +39
Boone 7 +4
McHenry 39 +8
Lake 47 -13
Carroll 1 0
Ogle 4 -2
DeKalb 9 +1
Kane 56 +21
DuPage 119 -16
Cook 1026 +202
Whiteside 3 0
Lee 3 0
Kendall 9 +1
Rock Island 2 -6
Henry 1 +1
Bureau 4 -3
Putnam
La Salle 15 -1
Grundy 6 -4
Will 63 -20
Kankakee 11 +4
Mercer 1 +1
Warren
Henderson 0 -1
Knox 2 -3
Stark
Marshall 3 +3
Peoria 2 -3
Woodford 4 0
Livingston 2 +1
Iroquois 1 -2
Hancock
McDonough 1 +1
Fulton 0 -2
Tazewell 7 -2
McLean 11 +3
Ford 2 -3
Schuyler
Adams
Brown
Cass
Mason
Menard
Logan 1 -1
Dewitt 1 -1
Champaign 12 +1
Vermilion 10 +3
Macon 3 +2
Piatt 1 -1
Douglas 0 -1
Edgar
Scott
Morgan 0 -1
Sangamon
Moultrie
Pike 0 -1
Calhoun
Greene
Christian 1 +1
Shelby 0 -1
Coles
Cumberland 1 0
Clark
Jersey 1 +1
Macoupin 0 -2
Montgomery 0 -1
Effingham
Jasper
Crawford
Madison 2 +1
Bond
Fayette
Clay
Richland 0 -1
Lawrence 0 -1
Clinton 2 +2
Marion 0 -1
Wabash
St. Clair
Monroe
Washington
Wayne
Edwards
Jefferson 0 -1
Randolph
Perry
Franklin 0 -1
Hamilton
White
Gallatin
Williamson
Saline
Jackson
Union
Johnson
Pope
Hardin
Pulaski
Massac
Alexander
1 +1

Priority Intervention Area Demographic Report



Map Legend

Tract Mean for Highest 1/5 of Earners > 2x County Mean for Highest 1/5 of Earners, ACS 2009-2013

Vulnerable Populations Footprint, ACS 2010-2014

Community Health Care Centers, HRSA 2013

Hospitals, POS 2015

Public

Private

Other

2015 Priority Intervention Area

County Boundaries

2015 SHC — CHI CHNA Identified Priority Intervention Area

- Cook County, IL
- DuPage County, IL
- Lake County, IN
- Will County, IL

Footprint Definition:

- Population Below Poverty Level: >= 20%
- Population Less Than High School: >= 25%

Data Source

- Health Resources and Services Administration: 2013
- American Community Survey: 2009-2013
- American Community Survey: 2010-2014
- Provider of Services File: 2015
- TIGER 2013, U.S. Census Bureau

2015 SHC — Chicago CHNA: Vulnerable Population in Priority Intervention Area

Below 100% of Federal Poverty Level	Total	Percent*
Total Population in Poverty	1,072,181	14.89
Children Age 0-17 in Poverty	375,281	21.52

Below 200% of Federal Poverty Level	Total	Percent*
Total Population in Poverty	2,332,795	32.39

Educational Attainment	Total	Percent**
Population with No High School Diploma	673,400	13.86

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates.

** Percentage of the population for whom poverty has been determined.*
*** Percentage of the population age 25 and over.*

Demographics in Priority Intervention Area

Total Population	7,309,113
Total Area in Square Miles	2,608.00
Persons Per Square Mile	2,803

Population by Gender	Total	Percent
Male	3,554,228	48.63
Female	3,754,885	51.37

Population by Age Groups	Total	Percent
Age 0 to 17	1,761,130	24.09
Age 18 to 64	4,666,118	63.84
Age 65 and Up	881,865	12.07

Population by Race/Ethnicity	Total	Percent
Non-Hispanic White	3,645,487	49.88
Black or African American	1,494,015	20.44
Asian	465,977	6.38
Native American / Alaska Native	7,687	0.11
Native Hawaiian / Pacific Islander	1,548	0.02
Some Other Race	10,861	0.15
Multiple Race	104,546	1.43
Hispanic or Latino	1,578,992	21.60

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates.

Report prepared by Community Commons.

2015 SHC — Chicago CHNA Health Indicators Report

Report Area

2015 SHC — Chicago CHNA Priority Intervention Area

Demographics

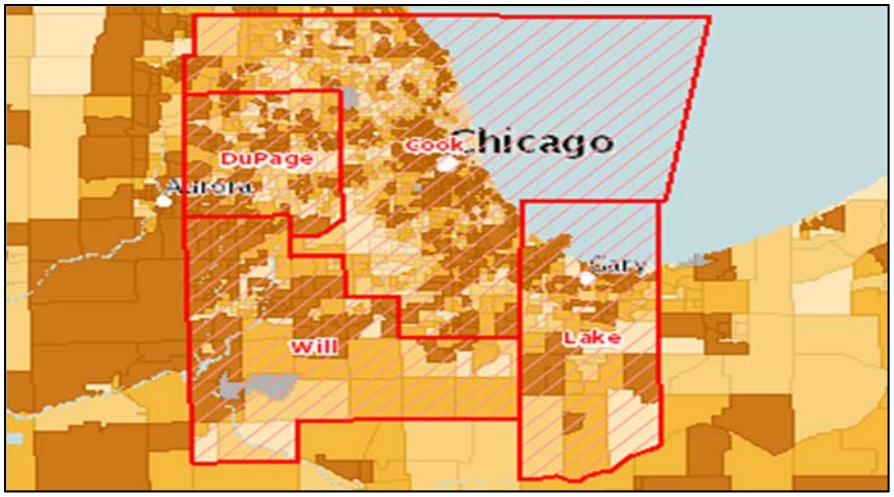
Current population demographics and changes in demographic composition over time play a determining role in the types of health and social services needed by communities.

Population under Age 18

This indicator reports the percentage of population under age 18 in the designated geographic area. This indicator is relevant because it is important to understand the proportion of youth in the community, as this population has unique health needs which should be considered separately from other age groups.

Report Area	Total Population	Population Age 0-17	Percent Population Age 0-17
Report Area	7,329,560	1,744,599	23.8%
Cook County, IL	5,227,827	1,208,585	23.12%
DuPage County, IL	926,485	223,069	24.08%
Will County, IL	682,108	189,479	27.78%
Lake County, IN	493,140	123,466	25.04%
Illinois	12,868,747	3,054,966	23.74%
Indiana	6,542,411	1,592,022	24.33%
United States	314,107,072	73,777,656	23.49%

Data Source: U.S. Census Bureau, American Community Survey. 2010-2014. Source Geography: Tract



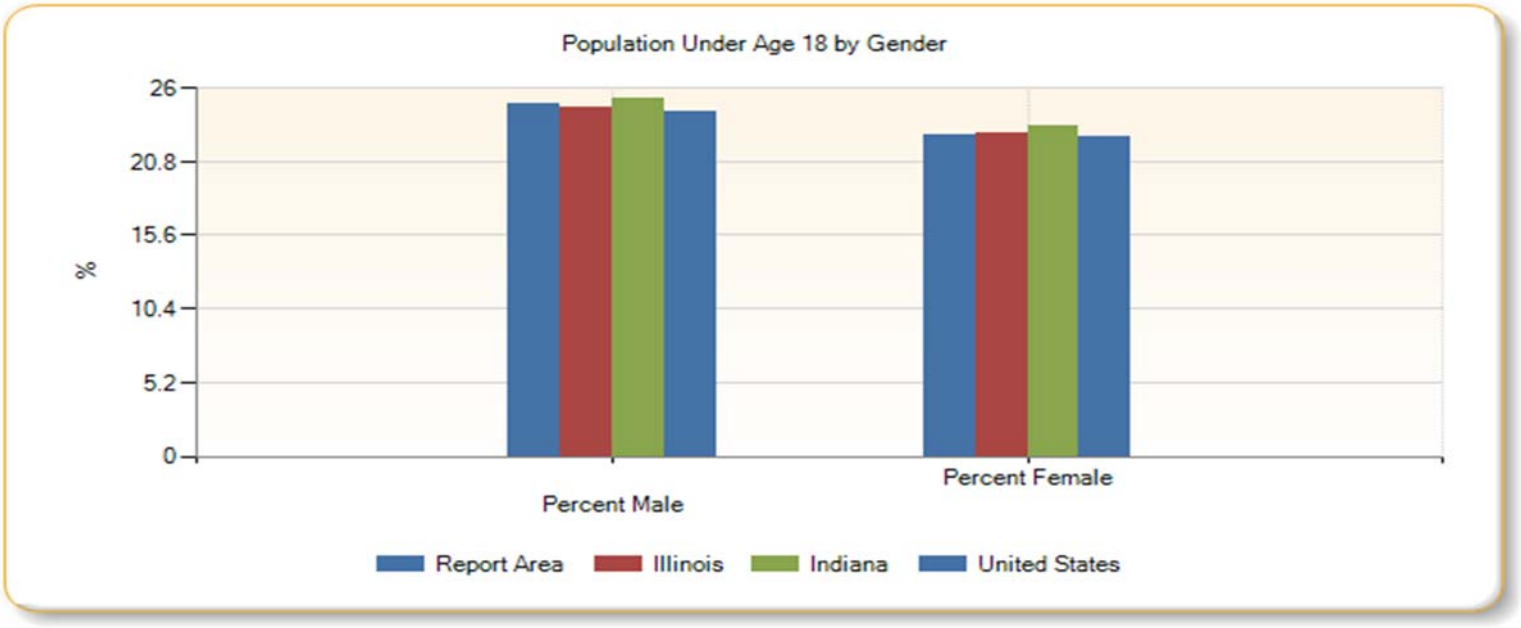
Population Age 0-17, Percent by Tract, ACS 2010-2014

- Over 26.0%
- 23.1 - 26.0%
- 20.1 - 23.0%
- Under 20.1%
- No Data or Data Suppressed
- Report Area

Data Source: U.S. Census Bureau, American Community Survey. 2010-2014. Source Geography: Tract

Population under Age 18 by Gender

Report Area	Total Male	Total Female	Percent Male	Percent Female
Report Area	887,867	856,732	24.92%	22.75%
Cook County, IL	613,997	594,588	24.25%	22.06%
DuPage County, IL	113,901	109,168	25.08%	23.12%
Will County, IL	96,974	92,505	28.64%	26.93%
Lake County, IN	62,995	60,471	26.44%	23.73%
Illinois	1,559,011	1,495,955	24.69%	22.82%
Indiana	814,442	777,580	25.29%	23.41%
United States	37,716,036	36,061,616	24.41%	22.6%

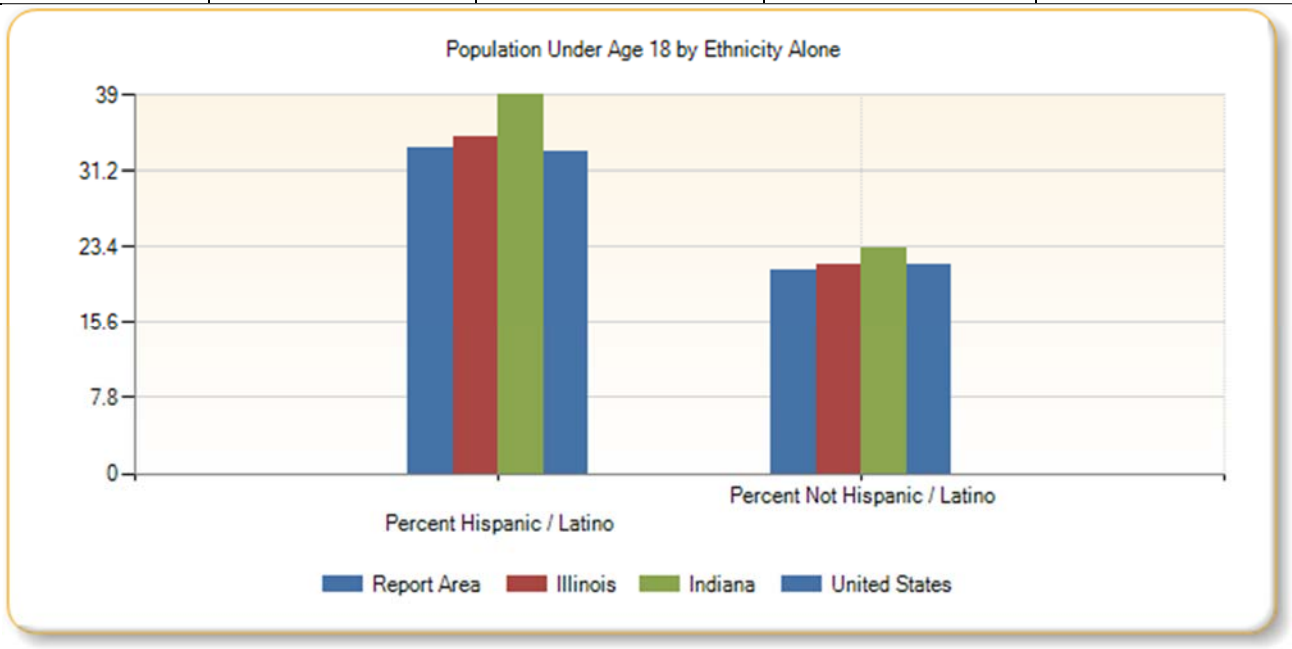


Data Source: U.S. Census Bureau, American Community Survey. 2010-2014. Source geography: Tract

Population under Age 18 by Ethnicity Alone

Report Area	Total Hispanic / Latino	Total Not Hispanic / Latino	Percent Hispanic / Latino	Percent Not Hispanic / Latino
Report Area	538,649	1,205,950	33.58%	21.06%
Cook County, IL	421,854	786,731	32.93%	19.93%
DuPage County, IL	45,657	177,412	35.91%	22.19%
Will County, IL	41,717	147,762	37.98%	25.82%
Lake County, IN	29,421	94,045	34.29%	23.09%
Illinois	726,056	2,328,910	34.65%	21.62%
Indiana	160,394	1,431,628	38.97%	23.35%

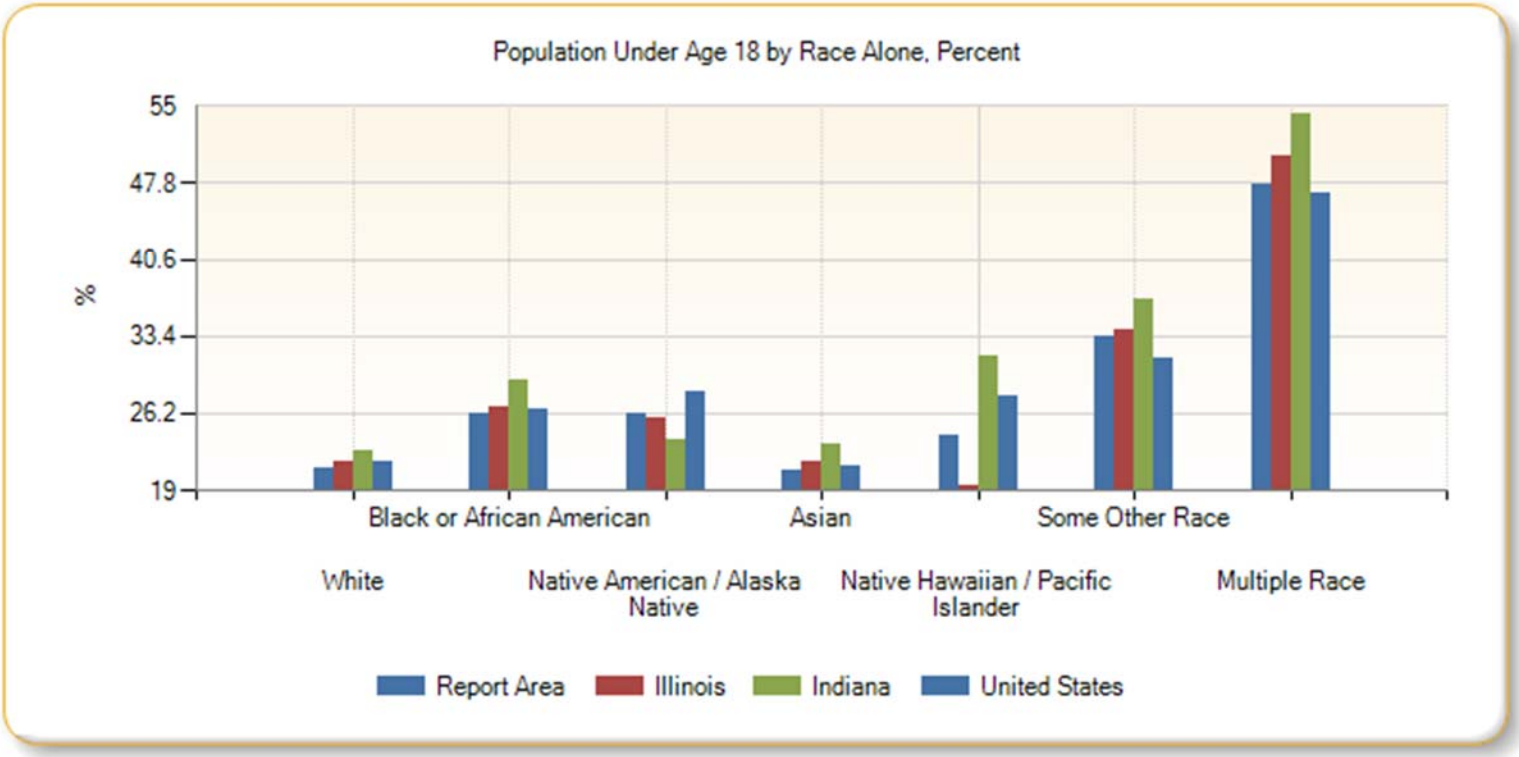
United States	17,561,660	56,215,992	33.09%	21.54%



Data Source: U.S. Census Bureau, American Community Survey. 2010-2014. Source geography: Tract

Population under Age 18 by Race Alone, Percent

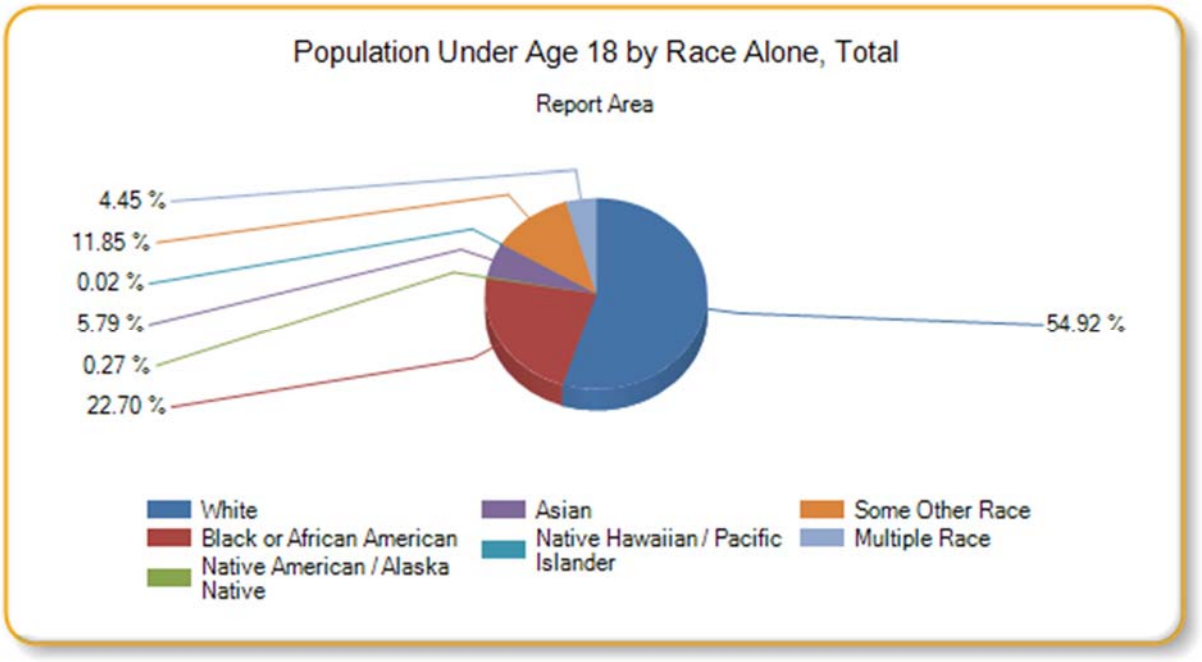
Report Area	White	Black or African American	Native American / Alaska Native	Asian	Native Hawaiian / Pacific Islander	Some Other Race	Multiple Race
Report Area	21.12%	26.27%	26.22%	20.9%	24.15%	33.36%	47.7%
Cook County, IL	19.9%	25.65%	25.27%	19.27%	12.13%	33.37%	44.52%
DuPage County, IL	22.79%	31.03%	29.72%	24.04%	19.83%	28.15%	51.1%
Will County, IL	25.95%	28.22%	31.76%	28.18%	76.86%	35.69%	59.73%
Lake County, IN	20.81%	29.73%	25.22%	22.83%	75.61%	33.57%	53.57%
Illinois	21.67%	26.72%	25.71%	21.65%	19.51%	33.94%	50.31%
Indiana	22.7%	29.32%	23.65%	23.41%	31.55%	36.81%	54.3%
United States	21.63%	26.63%	28.31%	21.19%	27.81%	31.3%	46.91%



Data Source: U.S. Census Bureau, American Community Survey. 2010-2014. Source Geography: Tract

Population under Age 18 by Race Alone, Total

Report Area	White	Black or African American	Native American / Alaska Native	Asian	Native Hawaiian / Pacific Islander	Some Other Race	Multiple Race
Report Area	958,177	395,940	4,774	100,945	421	206,669	77,673
Cook County, IL	592,144	324,391	3,356	66,626	134	172,073	49,861
DuPage County, IL	168,890	13,395	505	23,561	70	5,937	10,711
Will County, IL	133,559	21,136	479	9,329	93	14,352	10,531
Lake County, IN	63,584	37,018	434	1,429	124	14,307	6,570
Illinois	2,022,388	494,021	7,335	135,806	632	254,986	139,798
Indiana	1,253,063	175,439	3,615	26,850	655	55,765	76,635
United States	50,139,668	10,534,359	726,286	3,328,842	148,969	4,618,373	4,281,155



Data Source: U.S. Census Bureau, American Community Survey. 2010-2014. Source Geography: Tract

The Health Indicators Report Footnotes below include pertinent information concerning the data background, methodologies, and notes specific to race, ethnicity, and the identified data limitations. This report was prepared by Community Commons on March 28, 2016.

Community Health Needs Assessment (CHNA) – Health Indicators

Population under Age 18

Data Background

The American Community Survey (ACS) is a nationwide, continuous survey designed to provide communities with reliable and timely demographic, housing, social, and economic data. The ACS samples nearly 3 million addresses each year, resulting in nearly 2 million final interviews. The ACS replaces the long-form decennial census; however, the number of household surveys reported annually for the ACS is significantly less than the number reported in the long-form decennial census. As a result, the ACS combines detailed population and housing data from multiple years to produce reliable estimates for small counties, neighborhoods, and other local areas. Negotiating between timeliness and accuracy, the ACS annually releases current, one-year estimates for geographic areas with large populations; three-year and five-year estimates are also published each year for additional areas based on minimum population thresholds.

Citation: U.S. Census Bureau: A Compass for Understanding and Using American Community Survey Data (2008).

For more information regarding this U.S, Census Bureau ACS data, which outlines the data collection methodology and definitions, please refer to the American Community Survey public website.

Methodology

Population counts for demographic groups and total area population data are acquired from the U.S. Census Bureau's American Community Survey. Data represent estimates for the five-year period 2010-2014. Mapped data are summarized to 2010 census tract boundaries. Area demographic statistics are measured as a percentage of the total population based on the following formula:

Percentage = [Subgroup Population] / [Total Population] * 100

For more information on the data reported in the American Community Survey, please see the complete American Community Survey 2014 Subject Definitions.

Race and Ethnicity

- Race and ethnicity (Hispanic origin) are collected into two separate categories in the American Community Survey (ACS) based on methods established by the U.S. Office of Management and Budget (OMB) in 1997. Indicator race and ethnicity statistics are generated from self-identified survey responses. Using the OMB standard, the available race categories in the ACS include the following: White, Black, American Indian/Alaskan Native, Asian, and Other. An ACS Survey respondent may identify as one race alone, or may choose multiple races. Respondents selecting multiple categories are racially classified as "Two or More Races." The minimum Ethnicity categories are: Hispanic or Latino, and Not Hispanic or Latino. Respondents may only choose one ethnicity. All social and economic data are reported in the ACS public use files by race alone, ethnicity alone, and for the white non-Hispanic population.

Data Limitations

- In 2006, population group quarters (GQ) were beginning to be included in the ACS. Some forms of GQ population statistics have age and sex distributions that differ from the identified household population. As a result, the inclusion of the GQ population could portray a noticeable impact on the demographic distribution. This is particularly true for areas with a substantial GQ population (like areas within military bases, colleges, or jails).

Additional Secondary Data

Table 1

COOK COUNTY

	Cook County	Error Margin	Top U.S. Performers*	Illinois	Rank (of 102)
Health Outcomes					64
Length of Life					45
Premature death	6,794	6,715-6,873	5,200	6,349	
Quality of Life					87
Poor or fair health	17%	16-18%	10%	15%	
Poor physical health days	3.5	3.3-3.7	2.5	3.4	
Poor mental health days	3.5	3.3-3.7	2.3	3.3	
Low birth weight	9.1%	9.0-9.2%	5.9%	8.4%	
Health Factors					70
Health Behaviors					12
Adult smoking	18%	17-19%	14%	18%	
Adult obesity	25%	24-26%	25%	27%	
Food environment index	7.6		8.4	7.8	
Physical inactivity	21%	20-22%	20%	23%	
Access to exercise opportunities	99%		92%	89%	
Excessive drinking	21%	20-23%	10%	20%	
Alcohol-impaired driving deaths	39%		14%	37%	
Sexually transmitted infections	725		138	526	
Teen births	42	42-43	20	35	
Clinical Care					81
Uninsured	18%	18-19%	11%	15%	
Primary care physicians	1,088:1		1,045:1	1,266:1	
Dentists	1,250:1		1,377:1	1,453:1	
Mental health providers	505:1		386:1	604:1	
Preventable hospital stays	60	60-61	41	65	
Diabetic monitoring	83%	82-83%	90%	85%	

	Cook County	Error Margin	Top U.S. Performers*	Illinois	Rank (of 102)
Mammography screening	62.4%	61.6-63.2%	70.7%	64.4%	
Social & Economic Factors					85
High school graduation	78%			82%	
Some college	67.0%	66.5-67.5%	71.0%	66.7%	
Unemployment	9.6%		4.0%	9.2%	
Children in poverty	26%	25-27%	13%	21%	
Income inequality	5.3	5.2-5.3	3.7	4.8	
Children in single-parent households	38%	37-38%	20%	32%	
Social associations	7.1		22.0	9.9	
Violent crime	631		59	430	
Injury deaths	46	46-47	50	50	
Physical Environment					44
Air pollution - particulate matter	13.1		9.5	12.5	
Drinking water violations	1%		0%	2%	
Severe housing problems	24%	24-24%	9%	19%	
Driving alone to work	63%	62-63%	71%	74%	
Long commute - driving alone	49%	49-50%	15%	40%	

Source: County Health Ranking and Roadmaps. Retrieved from http://www.countyhealthrankings.org/app/#!/illinois/2015/rankings.

DUPAGE COUNTY

	DuPage County	Trend	Error Margin	Top U.S. Performers*	Illinois	Rank (of 102)
Health Outcomes						3
Length of Life						1
Premature death	4,195		4,044-4,347	5,200	6,349	
Quality of Life						23
Poor or fair health	12%		10-14%	10%	15%	
Poor physical health days	2.8		2.4-3.2	2.5	3.4	
Poor mental health days	3.1		2.7-3.6	2.3	3.3	
Low birth weight	7.3%		7.1-7.4%	5.9%	8.4%	
Health Factors						1
Health Behaviors						1
Adult smoking	12%		11-14%	14%	18%	
Adult obesity	24%		22-27%	25%	27%	
Food environment index	8.8			8.4	7.8	
Physical inactivity	19%		17-22%	20%	23%	
Access to exercise opportunities	99%			92%	89%	
Excessive drinking	20%		18-23%	10%	20%	
Alcohol-impaired driving deaths	27%			14%	37%	
Sexually transmitted infections	201			138	526	
Teen births	14		14-15	20	35	
Clinical Care						2
Uninsured	11%		10-12%	11%	15%	
Primary care physicians	746:1			1,045:1	1,266:1	
Dentists	1,045:1			1,377:1	1,453:1	

	DuPage County	Trend	Error Margin	Top U.S. Performers*	Illinois	Rank (of 102)
Mental health providers	421:1			386:1	604:1	
Preventable hospital stays	54		53-55	41	65	
Diabetic monitoring	87%		85-88%	90%	85%	
Mammography screening	66.6%		64.8-68.3%	70.7%	64.4%	
Social & Economic Factors						2
High school graduation	93%				82%	
Some college	76.8%		75.5-78.1%	71.0%	66.7%	
Unemployment	7.5%			4.0%	9.2%	
Children in poverty	10%		8-11%	13%	21%	
Income inequality	4.1		4.1-4.2	3.7	4.8	
Children in single-parent households	19%		18-20%	20%	32%	
Social associations	8.7			22.0	9.9	
Violent crime	97			59	430	
Injury deaths	32		31-34	50	50	
Physical Environment						75
Air pollution - particulate matter	13.0			9.5	12.5	
Drinking water violations	2%			0%	2%	
Severe housing problems	16%		15-17%	9%	19%	
Driving alone to work	78%		78-79%	71%	74%	
Long commute - driving alone	42%		41-42%	15%	40%	

Source: County Health Ranking and Roadmaps. Retrieved from http://www.countyhealthrankings.org/app/#!/illinois/2015/rankings.

LAKE COUNTY

	Lake County	Trend	Error Margin	Top U.S. Performers*	Illinois	Rank (of 102)
Health Outcomes						15
Length of Life						5
Premature death	4,753		4,571-4,936	5,200	6,349	
Quality of Life						41
Poor or fair health	14%		11-16%	10%	15%	
Poor physical health days	3.3		2.8-3.7	2.5	3.4	
Poor mental health days	3.2		2.7-3.7	2.3	3.3	
Low birth weight	7.6%		7.4-7.8%	5.9%	8.4%	
Health Factors						6
Health Behaviors						2
Adult smoking	14%		12-17%	14%	18%	
Adult obesity	26%		23-29%	25%	27%	
Food environment index	8.5			8.4	7.8	
Physical inactivity	19%		17-22%	20%	23%	
Access to exercise opportunities	96%			92%	89%	
Excessive drinking	19%		16-22%	10%	20%	
Alcohol-impaired driving deaths	46%			14%	37%	
Sexually transmitted infections	372			138	526	
Teen births	24		24-25	20	35	
Clinical Care						6
Uninsured	12%		11-13%	11%	15%	
Primary care physicians	981:1			1,045:1	1,266:1	
Dentists	956:1			1,377:1	1,453:1	
Mental health providers	456:1			386:1	604:1	
Preventable hospital stays	58		56-60	41	65	

	Lake County	Trend	Error Margin	Top U.S. Performers*	Illinois	Rank (of 102)
Diabetic monitoring	86%		84-88%	90%	85%	
Mammography screening	67.1%		65.0-69.1%	70.7%	64.4%	
Social & Economic Factors						18
High school graduation	88%				82%	
Some college	68.3%		66.9-69.7%	71.0%	66.7%	
Unemployment	8.7%			4.0%	9.2%	
Children in poverty	14%		12-16%	13%	21%	
Income inequality	4.6		4.4-4.7	3.7	4.8	
Children in single-parent households	23%		21-24%	20%	32%	
Social associations	7.3			22.0	9.9	
Violent crime	146			59	430	
Injury deaths	38		36-40	50	50	
Physical Environment						78
Air pollution - particulate matter	12.8			9.5	12.5	
Drinking water violations	1%			0%	2%	
Severe housing problems	18%		17-19%	9%	19%	
Driving alone to work	77%		76-77%	71%	74%	
Long commute - driving alone	45%		44-46%	15%	40%	

Source: County Health Ranking and Roadmaps. Retrieved from http://www.countyhealthrankings.org/app/#!/illinois/2015/rankings.

WILL COUNTY

	Will County	Trend	Error Margin	Top U.S. Performers*	Illinois	Rank (of 102)
Health Outcomes						21
Length of Life						14
Premature death	5,271		5,077-5,464	5,200	6,349	
Quality of Life						39
Poor or fair health	13%		11-15%	10%	15%	
Poor physical health days	3.2		2.8-3.5	2.5	3.4	
Poor mental health days	3.2		2.8-3.6	2.3	3.3	
Low birth weight	7.6%		7.4-7.8%	5.9%	8.4%	
Health Factors						19
Health Behaviors						13
Adult smoking	18%		15-21%	14%	18%	
Adult obesity	29%		26-33%	25%	27%	
Food environment index	8.4			8.4	7.8	
Physical inactivity	23%		20-26%	20%	23%	
Access to exercise opportunities	96%			92%	89%	
Excessive drinking	24%		21-27%	10%	20%	
Alcohol-impaired driving deaths	46%			14%	37%	
Sexually transmitted infections	315			138	526	
Teen births	23		23-24	20	35	
Clinical Care						34
Uninsured	11%		10-11%	11%	15%	
Primary care physicians	1,967:1			1,045:1	1,266:1	
Dentists	1,997:1			1,377:1	1,453:1	
Mental health providers	1,173:1			386:1	604:1	
Preventable hospital stays	80		77-82	41	65	
Diabetic monitoring	84%		82-86%	90%	85%	

	Will County	Trend	Error Margin	Top U.S. Performers*	Illinois	Rank (of 102)
Mammography screening	64.4%		62.2-66.5%	70.7%	64.4%	
Social & Economic Factors						21
High school graduation	86%				82%	
Some college	69.0%		67.5-70.4%	71.0%	66.7%	
Unemployment	9.4%			4.0%	9.2%	
Children in poverty	12%		10-13%	13%	21%	
Income inequality	3.7		3.6-3.8	3.7	4.8	
Children in single-parent households	22%		20-23%	20%	32%	
Social associations	6.5			22.0	9.9	
Violent crime	167			59	430	
Injury deaths	39		37-41	50	50	
Physical Environment						97
Air pollution - particulate matter	13.1			9.5	12.5	
Drinking water violations	2%			0%	2%	
Severe housing problems	16%		16-17%	9%	19%	
Driving alone to work	82%		82-83%	71%	74%	
Long commute - driving alone	50%		49-51%	15%	40%	

Source: County Health Ranking and Roadmaps. Retrieved from http://www.countyhealthrankings.org/app/#!/illinois/2015/rankings.

Key Findings

General Information on Scoliosis

Based on this review, the following information highlights the incidence and prevalence of scoliosis in the general population. Although it is usually diagnosed in the school aged years, undiagnosed curves that progress can cause pain and some disability in the adult population.

Recent data from the Scoliosis Research Society includes the following:

- Scoliosis is the most common deformity of the spine, affecting two to three percent of the U.S. population, or an estimated 7 million Americans.
- One quarter of children with spinal curves require medical attention.
- Scoliosis impacts infants, adolescents and adults, but the primary age of onset is between the ages of 10 and 15.
- Equal numbers of males and females have scoliosis, but females are eight times more likely to have a curve progress to a stage that requires treatment.
- 85 percent of scoliosis cases are idiopathic, meaning the cause is unknown.
- Scoliosis can run in families, and a child who has a relative with the condition should be checked regularly.
- Scoliosis is a condition that can impact quality of life by limiting activity, causing pain, and negatively impacting respiratory function and self-esteem.
- Early diagnosis is the key to keeping the condition from progressing and providing the best treatment.
- Frequency of scoliosis:
    - Scoliosis curves measuring at least 10° occur in 1.5% to 3.0% of the population
    - Curves exceeding 20° occur in 0.3% to 0.5% of the population
    - Curves exceeding 30° occur in 0.2% to 0.3% of the population
- Scoliosis is the most common deformity of the spine and early detection is the key to keeping the condition from progressing and providing treatment.

- Fewer than half of the nation's states currently legislate school screening of scoliosis, and some states are considering discontinuing those screenings. That means it is imperative that all members of the community are aware of the signs and symptoms of the condition. It's important to provide reminders throughout the year because early recognition of the condition will prevent needless suffering of children and their parents.
- The screening test for scoliosis is non-invasive, takes approximately 30 seconds, and could save a child you know years of pain in the future.
- New research and development for screening and non-operative interventions are providing opportunities for safer and more effective early diagnosis and patient care.

Healthy People 2020

One of the goals of Healthy People 2020 is to document and track population-based measures of health and well-being for early and middle childhood populations over time in the United States. There is increasing recognition that early and middle childhood provides the physical, cognitive, and social- emotional foundation for lifelong health, learning, and well-being.

The keys to understanding early and middle childhood health are recognizing the important role these periods play in adult health and well-being and focusing on conditions and illnesses that can seriously limit children's abilities to learn, grow, play, and become healthy adults. Emerging issues in early and middle childhood include implementing and evaluating multidisciplinary public health interventions that address social determinants of health by:

- Fostering knowledgeable and nurturing families, parents, and caregivers.
- Creating supportive and safe environments in schools, communities, and homes.
- Increasing access to high-quality health care.

Social Determinants of Health

Another goal of Healthy People 2020 is to create social and physical environments that promote good health for all. Health starts in our homes, schools, workplaces, neighborhoods, and communities.

Healthy People 2020 highlights the importance of addressing the social determinants of health by including "Create social and physical environments that promote good health for all" as one of the four overarching goals for the decade. The Social Determinants of Health topic area within Healthy People 2020 is designed to identify ways to create social and physical environments that promote good health for all. Five key areas of social determinants of health were developed by Healthy People 2020 which include: Economic Stability, Education, Social and Community Context, Neighborhood and Built Environment and Health and Health Care. This focuses on Access to Health services— including clinical and preventive care and Access to Primary Care— including community-based health promotion and wellness programs.

Conclusion

Based on these findings enhanced health education for early detection and treatment of scoliosis is a priority which could improve outcomes and quality of life for those who have the condition. Greater partnership and collaboration between the hospital and community schools and health care providers is a definite need to continue to educate medical and nursing professionals on the methods and value of scoliosis screening.

Action Plan

The Community Health Needs Assessment team met to formulate an action plan that would meet the needs of the target community being realistic and attainable with the resources available at SHC — Chicago. In the last three years many efforts were made by the professional liaison and medical staff to educate the community about early detection and treatment of scoliosis, types of state of the art treatments available and how to make a referral to Shriners Hospital.

Past Efforts

- Educational materials on scoliosis screening were developed by SHC — C and distributed to Cook County public schools and schools in Dupage, Will, and Lake counties, as well as to several pediatricians and school nurses in the area (although scoliosis screening is no longer mandatory in Illinois schools, having this information available to medical and nursing professionals who care for children will give them the tools needed for perform this very important assessment that can lead to early detection and treatment of Scoliotic curves).
- An Injury Prevention poster related to Backpack Safety was created and distributed to schools in four county areas (See Figures 2 and 3, pages 37and 38)
- Annual educational seminars for local pediatricians are hosted by Shriners Hospitals for Children — Chicago and have been well received.
- A Scoliosis Screening Poster (in English and Spanish) was created as an educational tool for potential evaluators in schools/clinics (see Figures 4 and 5, pages 39 and 40)
    - These posters were distributed to school nurses in four county areas and also at various conferences to pediatricians, nurse practitioners and other health care providers.
- A document was created that outlines treatment of Infantile, Juvenile, and Adolescent Scoliosis (see Figure 6, pages 41, 42 and 43) and was distributed to pediatricians and clinicians in the catchment area.
- SHC — C patient referral cards were created and distributed in catchment areas (see Figure 7, page 44)
- Connected through Facebook and Twitter with local and national scoliosis family and awareness groups. Information sharing and messages of support occur.

- Sharing patient success stories of how scoliosis diagnosis and proper treatment improved their everyday lives, on our hospital blog and website.
- Website redesigned to include more resources, links and education for the community.
- Share outcomes from research on patients with scoliosis and best practices in treatment.
- Article published in Chicago Special Parent Magazine highlighting the Lucky Cast Club and scoliosis care and diagnosis at Shriners Hospital for Children – Chicago.
- Established partnerships with Alden Nursing Care, Easter Seals of DuPage County and several other community programs to offer assessment and care to patients in need of our services.

Ongoing and Future Efforts

- Continue to conduct screening at community events (i.e.: health fairs, expos, community outreach events, etc.)
  - Utilize expertise of our orthopedic surgeons and nurse practitioners to screen children
- Additional full time pediatric orthopedic spine surgeon hired at SHC — Chicago to help treat more children with spine deformity in the community.
- Continue to offer opportunities for pediatric spine fellowships at the Chicago Hospital.
- Continue to host annual Lucky Cast Club summer picnic for patients, families and clinicians, focusing on patients who have infantile scoliosis and are receiving Mehta Cotrell casting.
- The EOS Imaging System is anticipated to be installed at the Chicago Hospital in the summer of 2016. It is currently the only system like it in the state of Illinois. The EOS Low Dose 2D/3D Imaging System Unique is a low dose orthopedic imaging system that allows for simultaneous bilateral long length images (full body or localized) in either a standing or seated position. It provides 3D imaging of the skeleton and automatically calculates a broad range of clinical parameters essential to diagnosis and surgical planning (see Figure 8, pages 45 and 46).
- Better classification of the areas of greatest need in the community through a refined process for identifying referral demands
- Continue to host educational seminars for pediatricians and family physicians to better understand how to diagnose and treat patients with scoliosis.

PRIORITY AREA: Early detection and treatment of scoliosis to control curve progression

GOAL: Continue to educate the community about early detection and treatment of scoliosis, types of state of the art treatments available.

PERFORMANCE MEASURES:

Is SHC— Chicago making a difference or a significant impact in our community?

Short Term Indicators	Source	Frequency
Provide education/ connections to clinicians on the importance of early detection and treatment of scoliosis.	Physician Liaison Printed materials Mailers Screening posters	Monthly
Educate school nurses on early scoliosis screening techniques.	Physician Liaison Printed materials Mailers	Quarterly
Provide community outreach to families on the type of conditions treated at Shriners Hospital by participation in local community events.	Public Relations Printed Materials Social Media	Quarterly
Long Term Indicators	**Source**	**Frequency**
Provide formal education on methods for scoliosis treatment to licensed independent practitioners	Medical staff of the Chicago Hospital	Annually
Continue to identify pediatric patients through early screening and provide appropriate follow-up	Physician Liaison Printed Materials Screening Posters	Ongoing

OBJECTIVE #1: Provide education to school nurses on scoliosis screening

ACTION PLAN

Program or Activity	Target Date	Resources Required	Anticipated Result	Program or Activity Impact
School Nurse Screening Education – Provided to local schools and as part of setting up a booth at national conferences	Quarterly	Professional Liaison	School RNs would be knowledgeable about basic screening techniques.	Over 1,000 Scoliosis screening posters In English and Spanish) have been distributed and posted in all public schools in Cook County and several other counties and in states in the catchment area.

OBJECTIVE #2: Provide education to physicians, advanced practice RNs and physician's assistants on screening, diagnosis of scoliosis and conditions requiring a referral for further evaluation.

ACTION PLAN

Program or Activity	Target Date	Resources Required	Anticipated Result	Program or Activity Impact
Education of Local Pediatricians, PNPs, PAs	3/4/16 3/10/15	Medical staff	**Improved screening and early referral**	Very positive comments, requested further information and future programs.
Established partnership with facilities providing community health services (Easter Seals, Alden Nursing Care, County Health Departments,	Quarterly	Physician Liaison, Medical Staff	**Provide assessment and care to patients in need of our services**	Several patients have been referred and received care at our facility.

OBJECTIVE #3: Provide information to the community at large and support and treatment options to patients and families on scoliosis.

ACTION PLAN

Program or Activity	Target Date	Resources Required	Anticipated Result	Program or Activity Impact
Various community events, school health fairs, local business visits.	Quarterly	Public Relations Specialist Backpack safety	**Increased awareness of prevention strategies and resources available**	
Social Media Presence	Monthly	Social media platforms updated	**Develop support networks for patients and families**	Parent support networks in place through social media.

ALIGNMENT WITH LOCAL/STATE/ NATIONAL PRIORITIES

Obj #	Local Programs	Healthy People 2020	National Prevention Strategy
School Nurse Education	Professional liaison provided education to nurses at local schools and attended conferences in the catchment area to provide information on scoliosis screening and treatment. (Details on programs conducted available on request.)	Social Determinants of Health	Position Statement endorsed by AAP, SRS and AAOS.
LIP Education	Annual Pediatric Symposium		Position Statement endorsed by AAP, SRS and AAOS.
Community Outreach	Outreach to local business, schools and community events on backpack safety and scoliosis screening.	Social Determinants of Health	Position Statement endorsed by AAP, SRS and AAOS.

Supplemental Research

Research reinforces call for early scoliosis detection, appropriate treatment

www.eurekalert.org/pub_releases/2016-01/aaoo-rrc011316.php

ROSEMONT, Ill.--In light of new research confirming the effectiveness of early and appropriate treatment for scoliosis, a newly revised position statement strongly supports timely screening and appropriate treatment to halt or minimize further curvature of the spine.

"Screening for the Early Detection of Idiopathic Scoliosis in Adolescent," is a joint statement between the American Academy of Orthopaedic Surgeons (AAOS), the American Academy of Pediatrics (AAP), the Pediatric Orthopaedic Society of North America (POSNA) and the Scoliosis Research Society (SRS).

Scoliosis is a condition that causes the spine to curve sideways. And while there are several different types of scoliosis that affect children and adolescents, the most common is idiopathic scoliosis, which means the exact cause of the condition is not known. For years, routine scoliosis screening has been controversial with studies both supporting and discouraging efforts. However, the 2013, multi-center National Institutes of Health (NIH)-funded study, Bracing in Adolescent Idiopathic Scoliosis Trial (BrAIST), documented significant success in preventing spinal curve progression and surgery in children who were screened, diagnosed, and treated with a custom brace.

"The BrAIST study provided high quality evidence that bracing for adolescent idiopathic scoliosis can decrease the rate of progression of spinal curve to the surgical level," said M. Timothy Hresko, MD, co-author of the revised statement. "Early detection of scoliosis is essential to identifying patients who may benefit from the use of a spinal brace. The new, 2016 joint position statement--released jointly by four prominent child health organizations--reflects the importance of early scoliosis detection."

The revised statement highlights the BrAIST research and strongly recommends that:

- Screening examinations for spine deformity be part of medical home preventive care visits for girls at age 10 and age 12; for boys, once at age 13 or 14.
- Screening programs have well-trained personnel who can appropriately administer forward bending tests, and the use of a scoliometer, to correctly measure and identify abnormal spine curvature, and to refer patients for additional tests and imaging as needed.
- Any imaging tests adhere to the principles of ALARA (As Low as Reasonably Achievable) standards to minimize radiation exposure in young patients.
- Bracing is an effective non-operative intervention to reduce the risk of progression to surgical treatment.

Exhibits

Figure 2

Figure 3

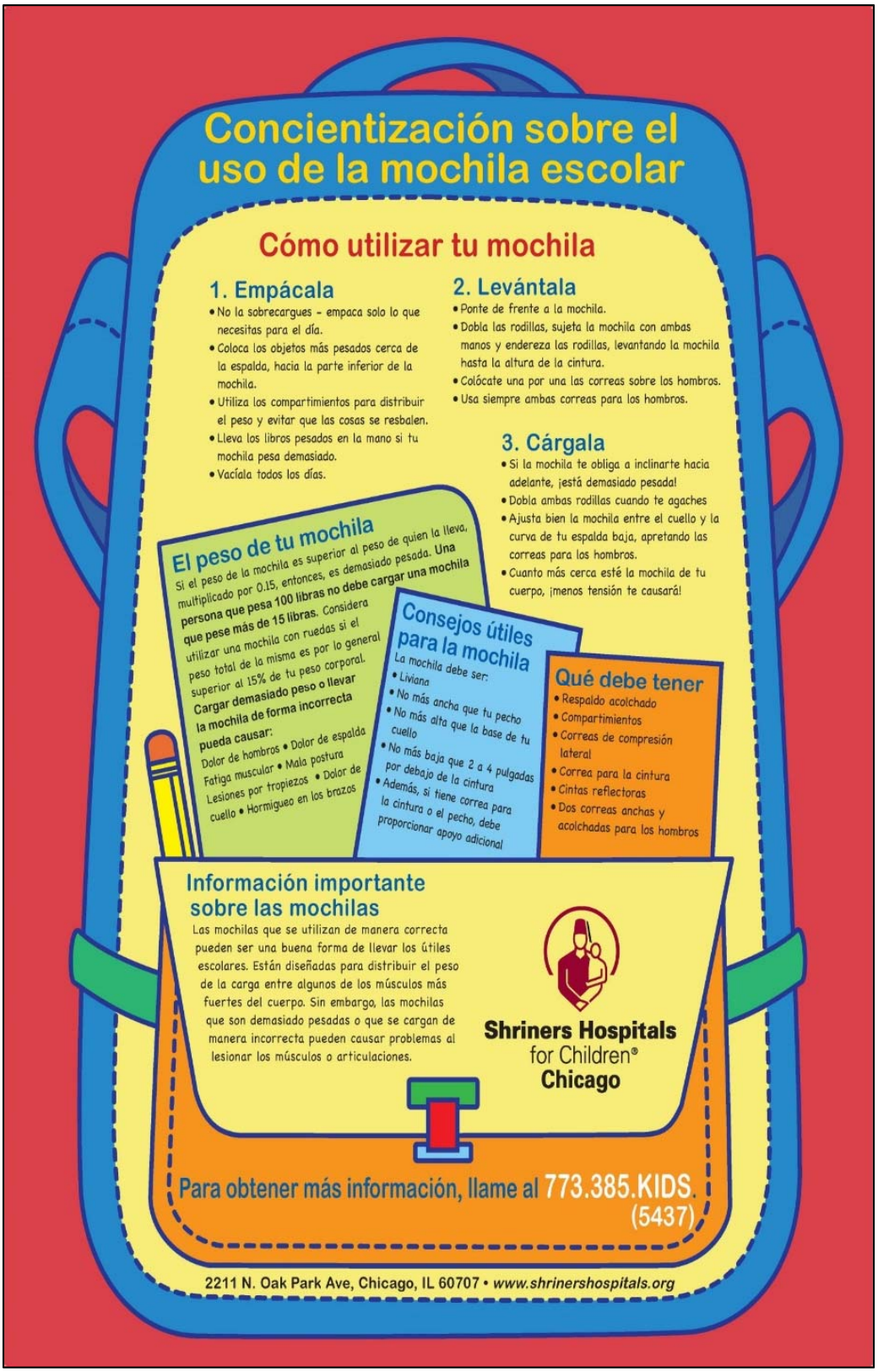

Concientización sobre el uso de la mochila escolar
Cómo utilizar tu mochila
1. Empácala
• No la sobrecargues - empaca solo lo que necesitas para el día.
• Coloca los objetos más pesados cerca de la espalda, hacia la parte inferior de la mochila.
• Utiliza los compartimientos para distribuir el peso y evitar que las cosas se resbalen.
• Lleva los libros pesados en la mano si tu mochila pesa demasiado.
• Vacíala todos los días.
2. Levántala
• Ponte de frente a la mochila.
• Dobla las rodillas, sujeta la mochila con ambas manos y endereza las rodillas, levantando la mochila hasta la altura de la cintura.
• Colócate una por una las correas sobre los hombros.
• Usa siempre ambas correas para los hombros.
3. Cárgala
• Si la mochila te obliga a inclinarte hacia adelante, ¡está demasiado pesada!
• Dobla ambas rodillas cuando te agaches
• Ajusta bien la mochila entre el cuello y la curva de tu espalda baja, apretando las correas para los hombros.
• Cuanto más cerca esté la mochila de tu cuerpo, ¡menos tensión te causará!
El peso de tu mochila
Si el peso de la mochila es superior al peso de quien la lleva, multiplicado por 0.15, entonces, es demasiado pesada. Una persona que pesa 100 libras no debe cargar una mochila que pese más de 15 libras. Considera utilizar una mochila con ruedas si el peso total de la misma es por lo general superior al 15% de tu peso corporal.
Cargar demasiado peso o llevar la mochila de forma incorrecta pueda causar:
Dolor de hombros • Dolor de espalda
Fatiga muscular • Mala postura
Lesiones por tropiezos • Dolor de cuello • Hormigueo en los brazos
Consejos útiles para la mochila
La mochila debe ser:
• Liviana
• No más ancha que tu pecho
• No más alta que la base de tu cuello
• No más baja que 2 a 4 pulgadas por debajo de la cintura
• Además, si tiene correa para la cintura o el pecho, debe proporcionar apoyo adicional
Qué debe tener
• Respaldo acolchado
• Compartimientos
• Correas de compresión lateral
• Correa para la cintura
• Cintas reflectoras
• Dos correas anchas y acolchadas para los hombros
Información importante sobre las mochilas
Las mochilas que se utilizan de manera correcta pueden ser una buena forma de llevar los útiles escolares. Están diseñadas para distribuir el peso de la carga entre algunos de los músculos más fuertes del cuerpo. Sin embargo, las mochilas que son demasiado pesadas o que se cargan de manera incorrecta pueden causar problemas al lesionar los músculos o articulaciones.
Shriners Hospitals for Children® Chicago
Para obtener más información, llame al 773.385.KIDS (5437)
2211 N. Oak Park Ave, Chicago, IL 60707 • www.shrinershospitals.org

Figure 4

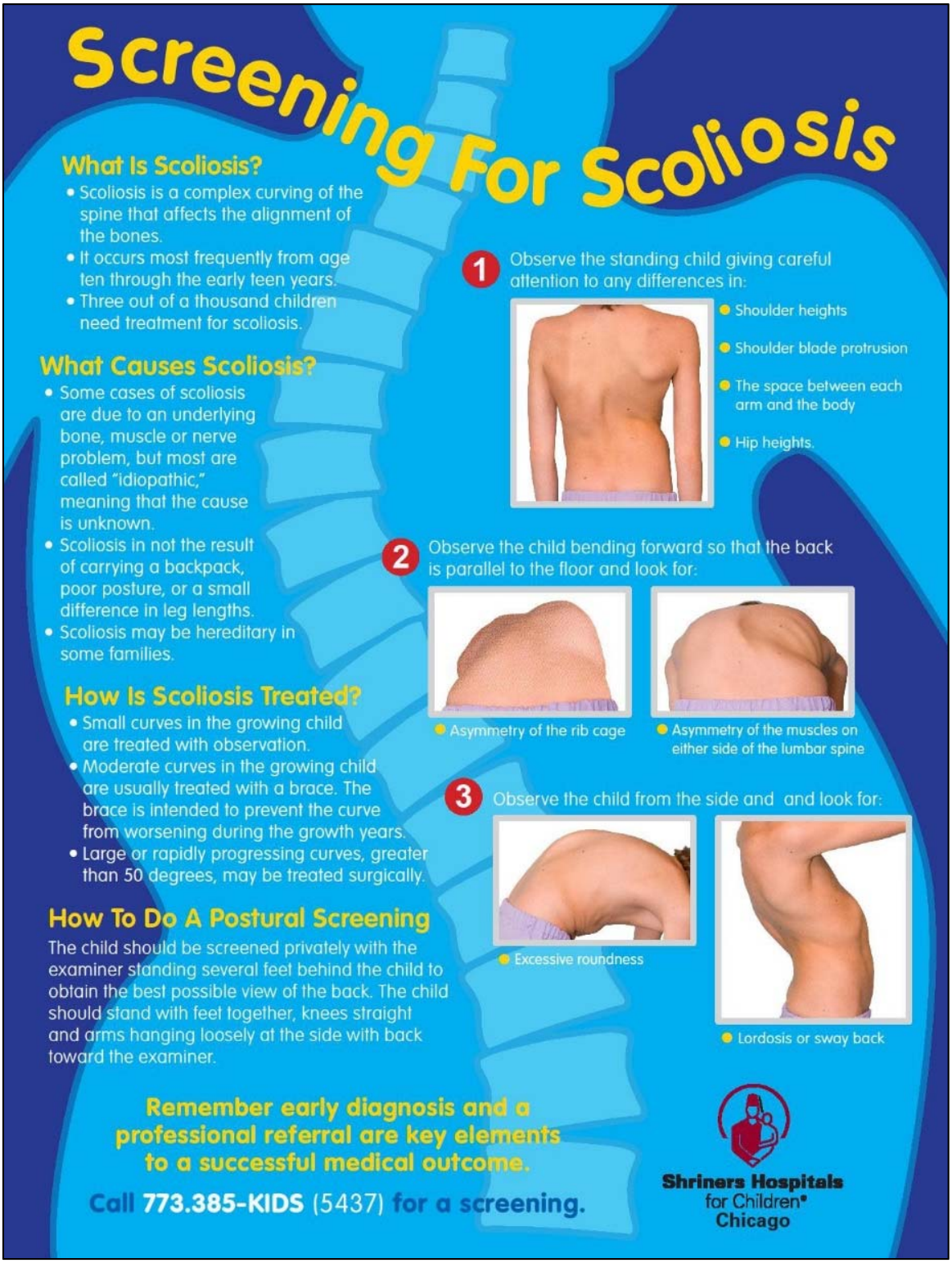

Screening For Scoliosis
What Is Scoliosis?
• Scoliosis is a complex curving of the spine that affects the alignment of the bones.
• It occurs most frequently from age ten through the early teen years.
• Three out of a thousand children need treatment for scoliosis.
What Causes Scoliosis?
• Some cases of scoliosis are due to an underlying bone, muscle or nerve problem, but most are called "idiopathic," meaning that the cause is unknown.
• Scoliosis in not the result of carrying a backpack, poor posture, or a small difference in leg lengths.
• Scoliosis may be hereditary in some families.
How Is Scoliosis Treated?
• Small curves in the growing child are treated with observation.
• Moderate curves in the growing child are usually treated with a brace. The brace is intended to prevent the curve from worsening during the growth years.
• Large or rapidly progressing curves, greater than 50 degrees, may be treated surgically.
How To Do A Postural Screening
The child should be screened privately with the examiner standing several feet behind the child to obtain the best possible view of the back. The child should stand with feet together, knees straight and arms hanging loosely at the side with back toward the examiner.
1 Observe the standing child giving careful attention to any differences in:
• Shoulder heights
• Shoulder blade protrusion
• The space between each arm and the body
• Hip heights.
2 Observe the child bending forward so that the back is parallel to the floor and look for:
• Asymmetry of the rib cage
• Asymmetry of the muscles on either side of the lumbar spine
3 Observe the child from the side and and look for:
• Excessive roundness
• Lordosis or sway back
Remember early diagnosis and a professional referral are key elements to a successful medical outcome.
Call 773.385-KIDS (5437) for a screening.
Shriners Hospitals for Children® Chicago

Figure 5

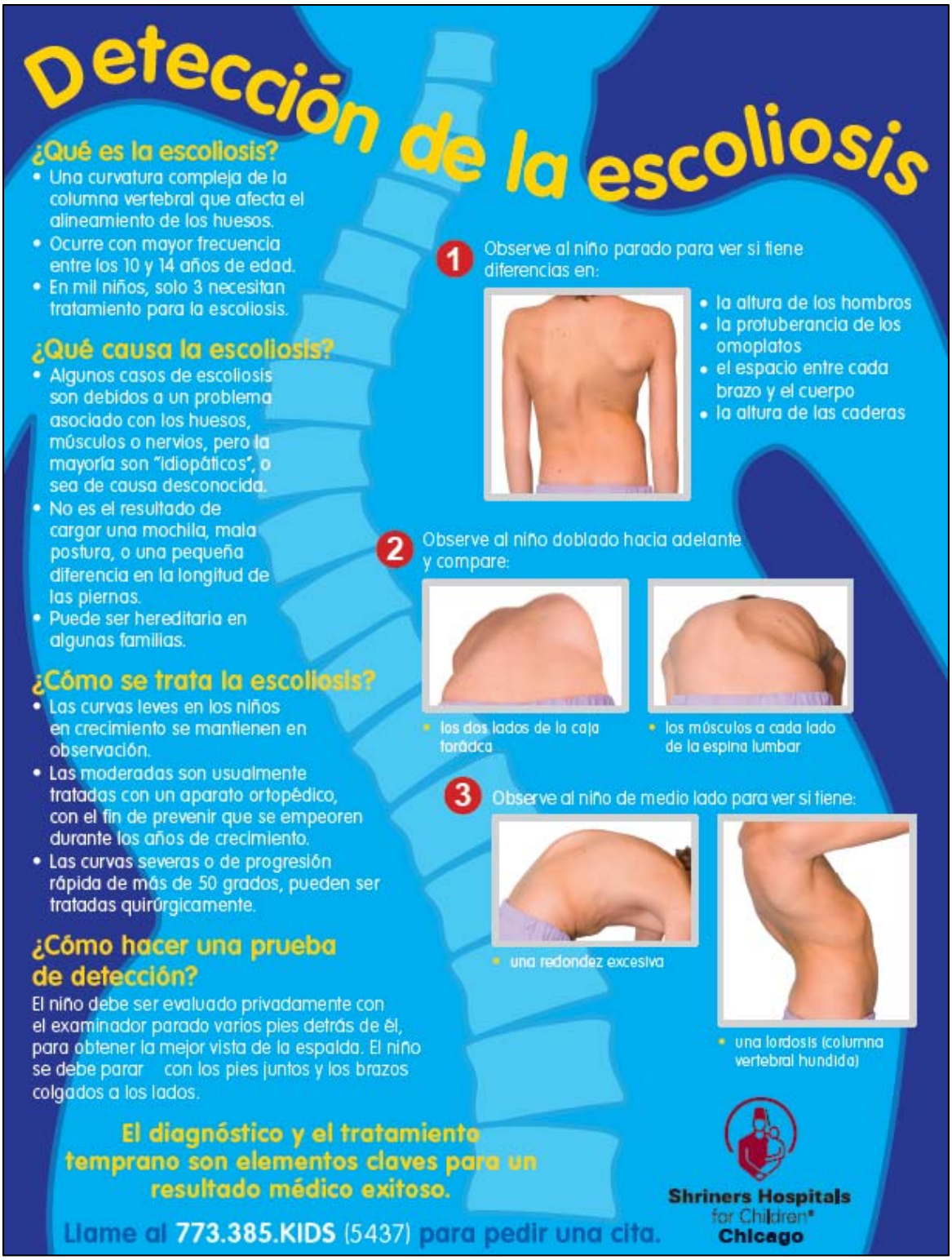

Detección de la escoliosis
¿Qué es la escoliosis?
• Una curvatura compleja de la columna vertebral que afecta el alineamiento de los huesos.
• Ocurre con mayor frecuencia entre los 10 y 14 años de edad.
• En mil niños, solo 3 necesitan tratamiento para la escoliosis.
¿Qué causa la escoliosis?
• Algunos casos de escoliosis son debidos a un problema asociado con los huesos, músculos o nervios, pero la mayoría son "idiopáticos", o sea de causa desconocida.
• No es el resultado de cargar una mochila, mala postura, o una pequeña diferencia en la longitud de las piernas.
• Puede ser hereditaria en algunas familias.
¿Cómo se trata la escoliosis?
• Las curvas leves en los niños en crecimiento se mantienen en observación.
• Las moderadas son usualmente tratadas con un aparato ortopédico, con el fin de prevenir que se empeoren durante los años de crecimiento.
• Las curvas severas o de progresión rápida de más de 50 grados, pueden ser tratadas quirúrgicamente.
¿Cómo hacer una prueba de detección?
El niño debe ser evaluado privadamente con el examinador parado varios pies detrás de él, para obtener la mejor vista de la espalda. El niño se debe parar con los pies juntos y los brazos colgados a los lados.
1 Observe al niño parado para ver si tiene diferencias en:
• la altura de los hombros
• la protuberancia de los omoplatos
• el espacio entre cada brazo y el cuerpo
• la altura de las caderas
2 Observe al niño doblado hacia adelante y compare:
• los dos lados de la caja torácica
• los músculos a cada lado de la espina lumbar
3 Observe al niño de medio lado para ver si tiene:
• una redondez excesiva
• una lordosis (columna vertebral hundida)
El diagnóstico y el tratamiento temprano son elementos claves para un resultado médico exitoso.
Llame al 773.385.KIDS (5437) para pedir una cita.
Shriners Hospitals for Children® Chicago

Figure 6

Spinal Deformity Treatments

Shriners Hospitals for Children — Chicago offers an extensive spinal deformity program.
Treatment for spinal conditions, including scoliosis, vary depending on the cause of the disorder and progression of the spinal curve.

Scoliosis is an abnormal curvature of the spine. While small curves do not typically cause medical problems, large curves can lead to complications. If untreated, scoliosis can rapidly progress, causing breathing problems as well as cosmetic disfigurement. Traditional treatments include casting, spinal bracing, and spinal fusion.

Right: **Dr. Kim Hammerberg**, Chief of Spine Surgery; Assistant Professor: Department of Orthopaedic Surgery, Rush Medical College.
Left: **Dr. Purnendu Gupta**, Spine Surgeon; Clinical Professor: Orthopaedic Surgery, University of Illinois.

TREATMENT METHODS

Bracing
Offering the best non-surgical treatment for most kinds of scoliosis, braces are customized to each patient, and are produced in an on-site orthotics department.

Setting it straight with casts:
Emily, a Chicago Shriners Hospital patient with infantile scoliosis displays her array of Mehta-Cotrel casts. Allowing for more correction than bracing, Mehta-Cotrel casting is intended for children from a few months old up to age 5. Children wear customized casts for 2 to 3 months, take one week off, and are casted again.

continued on back »

Spinal Deformity Treatments

Serial or Mehta-Cotrel Casting

Doctors mold the infant or child with a corrective cast. In select patients, it is possible to obtain a significant spinal correction.

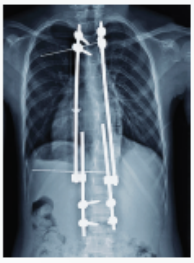
Infantile scoliosis

After treatment

Growing Rods

Scaled down versions of conventional spinal instrumentation used to control curvatures in growing children too young to undergo spinal fusion surgery.

Adolescent scoliosis



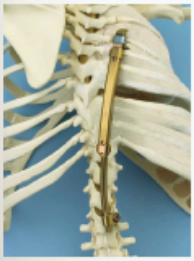
After treatment

The MAGEC System

A surgically implanted magnetic rod braces the spine through growth to minimize curve progression. The rod can be non-invasively distracted with a remote post surgery.

The VEPTR System

The Vertical Expandable Prosthetic Titanium Rib system uses titanium rods and expandable sleeves attached to the ribs, spine or pelvis to help treat congenital scoliosis.



VEPTR hardware is attached to ribs, spine or pelvis, depending on the patient's condition.

Spinal Fusion

A surgical procedure that involves fusing the vertebrae to straighten the spine, and the implantation of corrective rods which help align the shoulders and hips.

Posterior Spinal Fusion with instrumentation for definitive treatment of severe scoliosis.

Schroth-Based BSPTS Method

The non-surgical Barcelona Scoliosis Physical Therapy School method consists of exercises, stretching, and breathing and may be beneficial for select patients.

Done correctly, BSPTS exercises are painless and increase mobility and balance.

Infantile, Juvenile and Adolescent Scoliosis Treatment

Shriners Hospitals for Children — Chicago specializes in the treatment of infantile, juvenile and adolescent scoliosis. Defined as an abnormal lateral curvature of the spine, scoliosis is diagnosed when a curve exceeds 10 degrees, and is confirmed with X-rays taken from back to front.

When scoliosis is confirmed, a course of treatment is determined and discussed with the patient and family. While each case is unique, the objective remains the same: stop the progression of the curve, and attempt to correct it through non-surgical or surgical intervention.

Clinical Indicators of Scoliosis

- Shoulders are at different heights
- Head is not centered over pelvis
- One hip appears higher, or is more prominent
- Rib cage is uneven
- Entire body leans to one side

Stages of treatment may include:

1. Observation
2. Physical Therapy
3. Bracing
4. Casting
5. Traction
6. Surgery

Treatment of Skeletally-Immature Adolescents

Degree of Curve	Course of Action
< 10°	Observe patient over time
10 - 25°	Periodic X-rays
25 - 45°	Begin bracing of back
> 45°	Possible surgical intervention

Every year, the spine specialists at Shriners Hospital in Chicago perform over 120 spine surgeries and about 171 Mehta-Cotrel cast applications to improve the quality of life for children and adolescents with scoliosis. After treatment most patients resume participation in school, extracurricular, and community activities.

Treatment Methods

Mehta-Cotrel Casting (Non-Surgical)

Infantile scoliosis

After treatment:
serial Mehta-Cotrel casting

Spine Surgery

Adolescent scoliosis

After treatment:
anterior release, traction, posterior spinal fusion and instrumentation

Do You Know a Child Who Needs Expert Specialty Care?

For a consultation or to refer a patient, call:
Shriners Hospitals for Children — Chicago
773-385-KIDS (5437)
2211 N. Oak Park Ave., Chicago, IL 60707

Shriners Hospitals for Children®
Love to the rescue.™

Figure 7


For spine-related issues,
we've got your back.
Since 1926, Shriners Hospitals for Children® — Chicago has specialized in pediatric orthopaedics, providing quality care to children regardless of their families' ability to pay.
To refer a patient, call 773-385-KIDS.
Shriners Hospitals for Children — Chicago has an extensive spinal deformity program led by Dr. Kim Hammerberg and Dr. Pernendu Gupta.
Treatment for spinal conditions, including scoliosis vary depending on the cause of the disorder and the progression of the spinal curve.
Treatments include:
• Bracing coordinated with on-site orthotics department
• Serial or Mehta casting
• Posterior or anterior spinal instrumentation with or without fusion
• Spinal fusion
• Growing rods
• Vertical Expandable Prosthetic Titanium Rib (VEPTR)
Kim Hammerberg, M.D. and Pernendu Gupta, M.D.
It's easy to refer a patient.
call: 773-385-KIDS (5437)
or fax: 773-385-5506
When faxing, please include any relevant medical charts.
Shriners Hospitals for Children®
Chicago
Love to the rescue.™
2211 N. Oak Park Ave. Chicago, IL 60707-3392

Figure 8

Shriners Hospitals for Children®

Chicago

FACT SHEET EOS

EOS Low Dose 2D/3D Imaging System

OVERVIEW

- Unique, low dose orthopedic imaging system allows for simultaneous bilateral long length images (full body or localized) in either a standing or seated position
- Provides 3D imaging of the skeleton and automatically calculates a broad range of clinical parameters essential to diagnosis and surgical planning
- Developed from Nobel Prize-winning technology and used in over 150,000 procedures to date across North America, Europe and Australia

COMPONENTS

- **EOS slot scanner** takes Frontal and Lateral X-ray images of patients in either standing or seated weight-bearing positions
  - High energy particle detector enables imaging to be performed at lower dose with enhanced image detail and contrast—and without the vertical distortion of long length films and other digital imaging systems
  - Images delivered at true life size for more informed diagnosis
- **SterEOS workstation** creates full length 3D rendering of skeletal anatomy and calculates over 100 clinical parameters for spine, pelvis and lower limb orientation for pre- and post-operative planning
  - Enables creation of complete patient report including images and charts
  - User-friendly interface for step-by-step guidance through 3D modeling process

BENEFITS

Low Dose Imaging

- Radiation exposure from medical imaging can carry long-term risks: study in *New England Journal of Medicine* suggests that as many as 2% of cancers cases in the U.S. may be tied to growing use of CT scans[i]
- EOS dose is documented to be up to nine times less than conventional computed radiography systems[ii] and up to 20 times less than a CT scan[iii]

Unique Full Body Imaging

- Prior to EOS, clinicians often had to "stitch" together multiple smaller images to approximate full picture of target anatomy; this process could be particularly problematic for complex orthopedic conditions, like spinal disorders
- EOS captures whole body images in a single scan without stitching or vertical distortion, providing true size images in 1:1 scale for highly accurate surgical planning measurement
- For the first time, Frontal and Lateral digital images up to 175cm may be obtained simultaneously

3D Imaging

- Because many orthopedic conditions occur across multiple planes of the body, 3D renderings offer an accurate representation that clinicians can view and analyze from multiple angles[iv]
- EOS's unique 3D imaging gives weight-bearing 3D model of the spine and lower limbs, enabling the calculation of additional clinical parameters
- It is the only system that enable physicians to globally evaluate patient's balance and posture in an natural upright position

Faster Imaging

- Proprietary detector produces a full or partial body, weight-bearing image in less than 20 seconds for an adult and less than 15 seconds for a child
- Full body imaging negates needs to stitch together several partial images
- Enables total exam cycles below four minutes for even complex spine exams[v] – much faster than traditional X-ray devices

CLINICAL APPLICATION

Spine

- Research shows spinal alignment is impacted by pelvic and lower limb position; full body imaging enables physicians to take full musculoskeletal alignment into consideration for more appropriate diagnosis and surgical planning[vi]
- Complex spinal deformity, such as scoliosis, is three dimensional and requires correction across three planes of the body; 3D imaging enables a more complete picture of the deformity to help plan complicated surgical treatments

Lower Limb (Hip/Knee)

- Planning for hip, knee and other lower limb surgeries involves careful assessment of musculoskeletal alignment; if the orientation of joint prosthesis is off even slightly, for example, it could let to a greater risk of complications such as implant failure
- Research shows 3D modeling with the EOS system can provide more accurate measurements of several key parameters used to evaluate lower limb alignment, such as tibial (shin bone) and femoral (thigh bone) length or frontal and lateral (side) knee angulations [iii,vii]

Pediatrics

- Low dose makes EOS advantageous for the pediatric population, particularly for children who have been diagnosed with scoliosis and are imaged frequently to monitor disease progression
    - Research shows effective dose of EOS imaging was seven times lower than that of full-field digital radiography for scoliosis follow-ups[viii]
    - Typically adolescent scoliosis patients must undergo scans every 3-6 months, up to 20+ over the course of treatment[ix]
- Recent study in *European Radiology* also supports 3D imaging in adolescents for more precise assessment of lower limb alignment compared to traditional 2D imaging[viii]

ABOUT EOS IMAGING

- EOS imaging is the developer of the EOS Imaging System and the leader in orthopedic imaging, dedicated to promoting a more holistic approach to musculoskeletal care with a lower imaging dose
- Company has corporate headquarters in Cambridge, Mass., USA, and Paris, France, as well as an office in Montreal, Canada

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[i] "Computed Tomography — An Increasing Source of Radiation Exposure," New England Journal of Medicine, November 2007
[ii] S. Parent et al. "Diagnostic imaging of spinal deformities: Reducing patients radiation dose with a new slot-scanning x-ray imager." Spine, April 2010, 35 (9): 989.
[iii] D. Folinais. "Lower Limb Torsional results: Comparison EOS/CT Scan." JFR Presentation, 2011.
[iv] "EOS – a new 2D|3D, Low Dose Musculoskeletal Imaging System," *Executive Healthcare*. February 2008.
[v] M. Alison, R. Azoulay, B. Tilea, S. Grandjean, T. Lefevre, I. Achour, G. Sebag, "Evaluation of workflow in a pediatric radiology department using Ultra Low Dose Digital Imaging." 2009 ESPR Congress.
[vi] Le Huec JC, Leijssen P, Duarte M, Aunoble S. "Thoracolumbar imbalance analysis for osteotomy planification using a new method: FBI technique." European Spine Journal; 2011;20 Suppl 5:669-80. Epub 2011/08/06
[vii] Gheno R., et al. Three-dimensional measurements of the lower extremity in children and adolescents using a low-dose biplanar X-ray device. European Radiology, 2011
[viii] Deschênes, "Dose and Scoliosis Radiographic Examination: How Can a Slit-scanning System Reduce Considerably Irradiation by Managing Scatter Reduction?," RSNA Annual Meeting 2011
[ix] National Scoliosis Foundation. "What You Need to Know About X-Rays."

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3-D Treatment of Scoliosis May Help Patients Avoid Surgery

Shriners Hospitals for Children — Chicago specializes in pediatric rehabilitation, specifically for the spine. By continually looking for new technology and techniques to treat spine conditions, the hospital's physical, occupational and speech therapists offer customized treatments that provide patients with the best care possible. One great example is 3-D treatment for scoliosis.

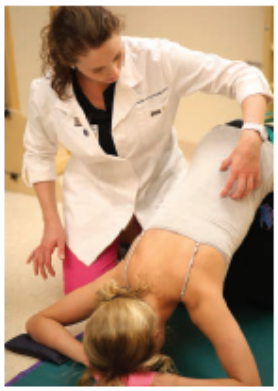
According to principles from Katherina and C.L. Schroth (a mother and daughter team who pioneered treatments for scoliosis), the 3-D treatment of scoliosis may prove an effective way to alleviate pain and help improve the spine.

Physical therapist Nicole Viverito, PT, is certified in C1 Basic Scoliosis-Specific Exercises. Nicole uses the postural exercises that are part of this program to help patients with idiopathic (unknown cause) scoliosis prevent further progression of their spinal curve. This method helps patients become more aware of their posture and spine alignment. It also works to improve trunk symmetry.

The therapy program at the Chicago Shriners Hospital uses several types of equipment, including a wall bar, belts, yoga blocks, resistance bands and other props. The exercises themselves involve various positions, muscle contractions, breathing, manual therapy and feedback to address the three-dimensional component of scoliosis. Patients in the program typically come to the hospital on a weekly basis for a one-hour therapy session and receive a custom home exercise program using the exercises they learned at the Chicago Shriners Hospital. For patients traveling far distances, a one-week intensive therapy program is available.

"To be successful in the program, there is a long-term commitment required by the patient to regularly perform the Scoliosis-Specific Exercises, in order to make and maintain the postural changes," said Viverito.

The 3-D treatment is most often introduced to patients with scoliosis curves greater than 15 degrees, when their referring physicians believe a conservative scoliosis-specific treatment approach is appropriate. In some cases it may help patients avoid surgery.



Nicole Viverito, PT, is certified in C1 Basic Scoliosis-Specific Exercises. Here she guides a patient through postural exercises. Due to the shape and involvement of different planes of movement of the spine with scoliosis, the 3-D treatment program focuses on forward-backward, side-to-side and rotational aspects of the spine.

CALL US

If you know a child who could benefit from rehabilitation services at the Chicago Shriners Hospital, please have their parent or guardian call **773-385-5437 (KIDS).**

CHICAGO | Orthopaedics, Spinal Cord Injury, Cleft Lip and Palate | 773-622-5400

Purnendu Gupta, M.D.

LETTER FROM LEADERSHIP

Customized Care for a Child's Unique Needs

I am pleased to have joined the medical team of Shriners Hospitals for Children® — Chicago on a full-time basis in 2015. For decades, staff at the Chicago Shriners Hospital have been providing care for patients with spinal disorders, from spina bifida to scoliosis.

We often talk with parents who feel like they have exhausted all medical care options for their child. For example, perhaps their child's spinal curve is so large they don't know where to turn next for help. That's where the Chicago Shriners Hospital comes in. By using advanced, effective treatment techniques such as Mehta-Cotrel body casting, halo traction and 3-D printing, we can chart the best treatment course for each patient based solely on their needs and unique condition.

Our multidisciplinary approach allows each patient's family to meet with a physician, nurse, social worker, recreation therapist, nutritionist and rehabilitation specialist to create a customized treatment plan. Recently, a teenage girl with a spinal curve of about 120 degrees had that curve reduced by more than half after treatment and surgery, which in turn lengthened her projected lifespan and improved her quality of life.

The Chicago Shriners Hospital's staff members are proud of our ability to identify each child's unique needs and create a personalized treatment plan for them. If you know a child who could benefit from the spine services at the Chicago Shriners Hospital, please call **773-385-5437 (KIDS)**.

Purnendu Gupta, M.D., orthopaedic surgeon
Shriners Hospitals for Children — Chicago

Scoliosis? We Offer a Variety of Treatment Options

Shriners Hospitals for Children — Chicago offers a wide range of rehabilitation services. Children ages 18 and younger have access to physical, occupational and speech therapy regardless of the family's ability to pay.

In recent years, most local junior and senior high schools provided scoliosis (curvature of the spine) screening for students. Since this is no longer the case, it's important for parents to have their children screened elsewhere because early detection can improve outcomes.

Shriners Hospitals for Children — Chicago offers scoliosis screening and is a pediatric rehabilitation site with an array of treatment options for children with moderate to severe scoliosis. Additionally, the biomedical engineers and physical therapists at our onsite movement analysis laboratory can provide an in-depth look at a patient's gait to help create a treatment plan. They also track progress over time after treatment.

The Chicago Shriners Hospital also conducts long-term research studies on scoliosis, which help improve treatment options and outcomes. If you know a child who could benefit from a scoliosis screening at the Chicago Shriners Hospital, call **773-385-5437 (KIDS)**.

***WHEREAS**, we must increase the public's awareness of scoliosis and help children, parents, adults, and health care providers understand, recognize, and treat the complexities of spinal deformities such as scoliosis; and,*

***WHEREAS**, scoliosis, an abnormal curvature of the spine with no known cause (idiopathic), is a condition affecting two to three percent of the population, or an estimated 7 million people in the United States. Scoliosis is a condition which strikes without regard to gender, race, age, or economic status; and,*

***WHEREAS**, an estimated one million scoliosis patients utilize health care yearly, with approximately one out of every six children diagnosed with this condition eventually required to receive active medical treatment; and,*

***WHEREAS**, the primary age of onset for scoliosis is between 10 and 15, with females being five times more likely to progress to a spinal curve magnitude that requires treatment; and,*

***WHEREAS**, screening programs allow for early detection and for treatment opportunities which may alleviate the worst effects of the condition; and,*

***WHEREAS**, we observe National Scoliosis Awareness Month to renew our commitment to raising awareness of and combating the spinal condition of scoliosis, and to recognize the need for increased research and funding to reduce the pain and suffering it causes;*

***THEREFORE**, I, Bruce Rauner, Governor of the State of Illinois, do hereby proclaim June 2016 as **NATIONAL SCOLIOSIS AWARENESS MONTH**, and pledge to continue to work to both raise awareness and fight scoliosis in the State of Illinois.*

In Witness Whereof, *I have hereunto set my hand and caused the Great Seal of the State of Illinois to be affixed.*

Done at the Capitol in the City of Springfield, this TWENTY-THIRD *day of* MAY*, in the Year of Our Lord, two thousand and* SIXTEEN*, and of the State of Illinois, one hundred and* NINETY-EIGHTH*.*

Jesse White
SECRETARY OF STATE

Bruce Rauner
GOVERNOR

Acknowledgements & References

- Illinois Department of Public Health (IDPH)
    - http://www.dph.illinois.gov/
- The Scoliosis Research Society
- U.S. Preventive Services Task Force
- Healthy People 2020
- County Health Rankings and Roadmaps
    - http://www.countyhealthrankings.org/app/#!/illinois/2015/rankings
- Centers for Disease Control and Prevention
- United States Census Bureau
    - http://www.census.gov/data/data-tools.html
- Truven Health Analytics
- American Academy of Orthopaedic Surgeons
- American Academy of Pediatrics
- Research reinforces call for early scoliosis detection, appropriate treatment. AAOS, AAP, POSNA and SRS revise scoliosis position statement
    - http://www.eurekalert.org/pub_releases/2016-01/aaoo-rrc011316.php